

Claims

Claims 1, 5, 7, 10, 12, 17, 21, 23, 24, 28 and 30-33 are currently amended.

Claims 2, 3, 9, 15, 18, 19, 25, 29 and 34 are cancelled.

Claims 4, 6, 8, 11, 13, 14, 16, 20, 22, 26 and 27 are original.

Claims 35-40 are new.

1. **(Currently Amended)** A composite metal sealing ring for sealing between a first and second tubular members, the first tubular member having a first bore and a first conical inner sealing surface, the second tubular member having a second bore and a second conical inner sealing surface, the metal sealing ring comprising:

a ~~metal~~carbon steel body having a body central bore substantially aligned with the first and second bores of the first and second tubular members;

a first conical outer sealing surface on the ~~metal~~carbon steel body for sealing with the first conical inner sealing surface;

a second conical outer sealing surface on the ~~metal~~carbon steel body axially opposing the first conical outer sealing surface for sealing with the second conical inner sealing surface; ~~and~~

at least one of a first and second ~~corrosion-resistant~~ inlay secured to the carbon steel body by welding and comprising one of a stainless steel and a corrosion resistant alloy and defining a respective one of the first and second conical outer sealing surfaces on the ~~metal~~carbon steel body[.]; and

an expansion coefficient of the carbon steel body is less than 6.5E-6 inches/inch/°F.

Claims

Claims 1, 5, 7, 10, 12, 17, 21, 23, 24, 28 and 30-33 are currently amended.

Claims 2, 3, 9, 15, 18, 19, 25, 29 and 34 are cancelled.

Claims 4, 6, 8, 11, 13, 14, 16, 20, 22, 26 and 27 are original.

Claims 35-39 are new.

1. **(Currently Amended)** A composite metal sealing ring for sealing between a first and second tubular members, the first tubular member having a first bore and a first conical inner sealing surface, the second tubular member having a second bore and a second conical inner sealing surface, the metal sealing ring comprising:

a ~~metal~~carbon steel body having a body central bore substantially aligned with the first and second bores of the first and second tubular members;

a first conical outer sealing surface on the ~~metal~~carbon steel body for sealing with the first conical inner sealing surface;

a second conical outer sealing surface on the ~~metal~~carbon steel body axially opposing the first conical outer sealing surface for sealing with the second conical inner sealing surface;~~and~~

at least one of a first and second ~~corrosion-resistant~~ inlay secured to the carbon steel body by welding and comprising one of a stainless steel and a corrosion resistant alloy and defining a respective one of the first and second conical outer sealing surfaces on the ~~metal~~carbon steel body[.]; and

an expansion coefficient of the carbon steel body is less than 6.5E-6 inches/inch/°F.

2 - 3. **(Cancelled)**

4. **(Original)** A composite metal sealing ring as defined in Claim 1, wherein a nominal inlay thickness is between about 1/32" and 3/16".

5. **(Amended)** A composite metal sealing ring as defined in Claim 1, wherein a nominal inlay thickness is less than about 10% of a nominal ~~metal~~carbon steel body thickness.

6. **(Original)** A composite metal sealing ring as defined in Claim 1, wherein a nominal inlay volume is between 2% and 30% of a nominal total volume of the composite metal sealing ring.

7. **(Amended)** A composite metal sealing ring as defined in Claim 1, further comprising:

a corrosion-resistant coating on one or both of the ~~metal~~carbon steel body and the at least one corrosion-resistant inlays.

8. **(Original)** A composite metal sealing ring as defined in Claim 7, wherein the corrosion-resistant coating is selected from the group consisting of silver, tin, molybdenum di-sulfide, and fluoropolymer.

9. **(Cancelled)**

10. **(Currently Amended)** A composite metal sealing ring as defined in Claim 1, wherein at least one of the first and second inner conical sealing surfaces includes a backup sealing surface adjacent a respective primary conical sealing surface; and

the at least one of the first and second conical outer sealing surfaces on the ~~metal~~carbon steel body defined by the at least one of the first and second corrosion-resistant inlays seals with the backup sealing surface.

11. **(Original)** A composite metal sealing ring as defined in Claim 1, further comprising:

the metal sealing ring is selected from the group consisting of an AX type, BX type, CX type, DX type, RX type, and VX type gasket.

12. **(Currently Amended)** A composite metal sealing ring for sealing between a first and second ~~tubular~~ members, the first ~~tubular~~ member having a central bore and a first conical inner sealing surface, the second ~~tubular~~ member having a central bore and a second conical inner sealing surface, the composite metal sealing ring comprising:

a metal body comprising one of a carbon steel and a low alloy steel, the metal body having a body central bore substantially aligned with the central bores of the first and second ~~tubular~~ members;

a first conical outer sealing surface for sealing with the first conical inner sealing surface;

a second conical outer sealing surface axially opposing the first conical outer sealing surface for sealing with the second conical inner sealing surface; ~~and~~

at least one of a first and second corrosion-resistant inlay comprising one of stainless steel and corrosion resistant alloy secured to the metal body by welding, the corrosion-resistant inlay defining a respective at least one of the first and second conical outer sealing surfaces and having a nominal inlay thickness of between about 1/32" and 3/16" [.]; and

an expansion coefficient of the metal body is less than 6.5E-6 inches/inch/°F.

13. **(Original)** A composite metal sealing ring as defined in Claim 12, further comprising:

a corrosion-resistant coating on one or both of the metal body and the at least one corrosion resistant inlays.

14. **(Original)** A composite metal sealing ring as defined in Claim 13, wherein the corrosion-resistant coating is selected from the group consisting of silver, tin, molybdenum di-sulfide, and fluoropolymer.

15. **(Cancelled)**

16. **(Original)** A composite metal sealing ring as defined in Claim 12, wherein at least one of the first and second inner conical sealing surfaces is a backup sealing surface adjacent a respective primary conical sealing surface; and

the at least one of the first and second conical outer sealing surfaces defined by the at least one of the first and second corrosion-resistant inlays seals with the backup sealing surface.

17. **(Currently Amended)** A method of sealing between a first and second ~~tubular~~ members, the first ~~tubular~~ member having a central bore and a first conical inner sealing surface, the second ~~tubular~~ member having a central bore and a second conical inner sealing surface, the metal sealing ring comprising:

providing a ~~metal~~steel body having a body central bore;

substantially aligning the body central bore with the central bores of the first and second ~~tubular~~ members;

providing a first conical outer sealing surface for sealing with the first conical inner sealing surface;

providing a second conical outer sealing surface axially opposing the first conical outer sealing surface for sealing with the second conical inner sealing surface;

~~providing welding~~ at least one of a first and second corrosion-resistant inlays comprising one of stainless steel and a corrosion resistant alloy to the steel body to define a respective at least one of the first and second conical outer sealing surfaces, an expansion coefficient of the steel body is less than 6.5E-6 inches/inch/°F; and

axially urging the first and second ~~tubular~~ members toward one another, to sealingly engage the first conical outer sealing surface with the first conical inner sealing surface and sealingly engage the second conical outer sealing surface with the second conical inner sealing surface.

18-19 (Cancelled)

20. **(Original)** A method as defined in Claim 17, further comprising:
selecting a nominal inlay thickness between about 1/32" and 3/16".

21. **(Currently Amended)** A method as defined in Claim 17, further comprising:
selecting a nominal inlay thickness less than about 10% of a nominal ~~metal~~steel body thickness.

22. **(Original)** A method as defined in Claim 17, further comprising:
selecting a nominal inlay volume between 2% and 30% of a nominal total volume of the composite metal sealing ring.

23. **(Currently Amended)** A method as defined in Claim 17, further comprising:

coating one or both of the ~~metal~~steel body and the at least one corrosion resistant inlays with a corrosion-resistant coating.

24. **(Currently Amended)** A method as defined in Claim ~~47~~23, further comprising:

selecting the corrosion-resistant coating from the group consisting of silver, tin, molybdenum di-sulfide, and fluoropolymer.

25. **(Cancelled)**

26. **(Original)** A method as defined in Claim 17, wherein at least one of the first and second inner conical sealing surfaces is a backup sealing surface adjacent a respective primary conical sealing surface; and

the at least one of the first and second conical outer sealing surfaces defined by the at least one of the first and second corrosion-resistant inlays seals with the backup sealing surface.

27. **(Original)** A method as defined in Claim 17, further comprising:
selecting a shape from the group consisting of AX, BX, CX, DX, RX, and VX type gaskets.

28. **(Currently Amended)** A composite metal sealing ring for sealing with a first ~~tubular~~ member, the first ~~tubular~~ member having a first bore and a first frustoconical inner sealing surface, the composite metal sealing ring comprising:

a ~~metal~~steel body having a body central bore substantially aligned with the first bore of the first tubular member;

the first inner sealing surface having one of a stainless steel and corrosion-

resistant alloy inlay welded to the first member and defining the first inner sealing surface;

a first frustoconical outer sealing surface on the ~~metal~~steel body for sealing with the first inner sealing surface; and

~~a first~~ another corrosion-resistant inlay formed from a stainless steel or a corrosion-resistant alloy and welded to the steel body, the another inlay defining the first outer sealing surface on the ~~metal~~steel body.

29. **(Cancelled)**

30. **(Currently Amended)** A composite metal sealing ring as defined in Claim 28, further comprising:

a second outer sealing surface on the ~~metal~~steel body opposite the first outer sealing surface, the second outer sealing surface for sealing with a second inner sealing surface of a second tubular member, the second tubular member having a second bore substantially aligned with the body central bore.

31. **(Currently Amended)** A composite metal sealing ring as defined in Claim 30, further comprising:

a second corrosion-resistant inlay defining the second outer sealing surface on the ~~metal~~steel body.

32. **(Currently Amended)** A composite metal sealing ring as defined in Claim 30, wherein at least one of the second outer sealing surface on the ~~metal~~steel body and the second inner sealing surface on the second tubular member is frustoconical.

33. **(Currently Amended)** A composite metal sealing ring as defined in Claim 28, further comprising:

a second outer sealing surface on the ~~metal~~steel body opposite the first outer sealing surface, the second outer sealing surface for sealing with a second sealing surface of a second body, ~~for sealing pressure between the first tubular member and the second body~~the second body comprising an end flange.

34. **(Cancelled)**

35. **(New)** Composite metal sealing rings for sealing between first and second members, the first member having a central bore and first conical primary and first conical backup inner sealing surfaces, the second member having second conical primary and second conical backup inner sealing surfaces, the composite metal sealing rings comprising:

a metal primary and a backup metal body each comprising one of a carbon steel and a low alloy steel, each metal body having a body central bore substantially aligned with the central bore of the first member;

a first conical primary outer sealing surface on the primary metal body for sealing with the first conical primary inner sealing surface;

a first conical backup outer sealing surface on the backup metal body for sealing with the first conical backup inner sealing surface, the first conical backup inner sealing surface being spaced from a cone defining the first conical primary inner sealing surface;

a second conical primary outer sealing surface on the metal body for sealing with the second conical primary inner sealing surface;

a second conical backup outer sealing surface on the backup metal body for sealing with the second conical backup inner sealing surface, the second conical backup inner sealing surface being spaced from a cone defining the second conical primary inner sealing surface;

a primary and a backup corrosion-resistant inlay each comprising one of a stainless steel and a corrosion resistant alloy secured by welding to the metal body and the backup metal body, respectively, the primary corrosion-resistant inlay defining a respective one of the first and second conical primary outer sealing surfaces, the backup corrosion resistant inlay defining a respective one of the first and second conical backup outer sealing surfaces, and each inlay having a nominal inlay thickness between about $1/32$ " and $3/16$ "; and

an expansion coefficient of each of the primary metal body and the backup metal body is less than $6.5E-6$ inches/inch/°F.

36. **(New)** Composite metal sealing rings as defined in Claim 35, further comprising:

a corrosion-resistant coating on at least one of the primary metal body and the backup metal body.

37. **(New)** Composite metal sealing rings as defined in Claim 36, wherein the corrosion-resistant coating is selected from the group consisting of silver, tin, molybdenum di-sulfide, and fluoropolymer.

38. **(New)** Composite metal sealing rings as defined in Claim 35, wherein a nominal thickness of the primary inlay is less than about 10% of a nominal primary metal body thickness.

39. **(New)** Composite metal sealing rings as defined in Claim 35, wherein a nominal volume of the primary inlay is between 2% and 30% of a nominal total volume of the primary metal body.

40. **(New)** Composite metal sealing rings as defined in Claim 35, wherein the first conical primary inner sealing surface has one of a stainless steel and corrosion-resistant alloy inlay welded to the first member and defining the first conical primary inner sealing surface.